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10/799,829	03/12/2004	John Sievers	199-0222US	8508

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WONG, CABELLO, LUTSCH, RUTHERFORD & BRUCCULERI,
L.L.P.
20333 SH 249
SUITE 600
HOUSTON, TX 77070

EXAMINER

WERNER, DAVID N

ART UNIT	PAPER NUMBER
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2621

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/799,829

Applicant(s)

SIEVERS, JOHN

Examiner

David N. Werner

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office action for US Patent Application 10/799,829 is in response to communications field 03 December 2007, in reply to the Non-Final Rejection of 02 August 2007. Currently, claims 1-20 are pending. Of those, claims 11-20 are new.
2. In the previous Office action, claims 1-6 were rejected under 35 U.S.C. 102(b) as anticipated by ITU-T H.261, and claims 7-10 were rejected under 35 U.S.C. 102(b) as anticipated by US Patent 5,305,097 A (Sato et al.). The abstract was objected to for failing to state a technical disclosure of the present invention.

Response to Amendment

3. Applicant's amendment to the abstract has been fully considered. The objection to the abstract has been withdrawn.

Response to Arguments

4. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.
5. In response to applicant's argument that "each of the claims recites that one or more macroblocks of a given frame to be Intra refreshed belong to a first slice group with remaining macroblocks being assigned to one or more additional slice groups", it is respectfully submitted that the language of the claim is too broad to permit a reading of **in an Inter frame** having at least one Intra refreshed macroblock and at least one Inter

macroblock, assigning the macroblocks that are intra refreshed in a first slice group and assigning the macroblocks that are not intra refreshed in one or more additional slice groups, as appears to be applicant's actual invention. See specification, page 4, "By sending a map placing a small subset of macroblocks in one slice group and the remainder of macroblocks in one or other more slice groups, one can produce the desired effect of isolating the refresh blocks of the picture from blocks that exploit image redundancies. Further, by sending a different map for each transmitted frame, each map corresponding with the macroblocks to be Intra refreshed in that frame, the effect of gradually refreshing all parts of the image can be achieved". Claim 1 recites, in part:

 "...assigning, for each frame, one or more of the plurality of macroblocks to be Intra refreshed to a first slice group;
 assigning, for each frame, a remainder of the plurality of macroblocks to one or more other slice groups..."

This does not limit the all the Intra refreshed macroblocks, and the Intra refreshed macroblocks alone, to be placed within the first slice group. The statement that "one or more" of Intra refreshed macroblocks is placed within a "first slice group" does not limit additional Intra refreshed macroblocks to be assigned to the "other slice group", and the statement that "a remainder" of additional macroblocks are assigned to the "other slice groups" does not limit an additional number of remaining macroblocks to be placed in the "first slice group". In other words, claim 1, as currently presented, only discloses a frame having a plurality of macroblocks, of which at least one is Intra refreshed, and a plurality of slice groups, with **no structural relationship between the Intra refreshed**

macroblocks and the slice groups. This prevents the claimed "map" of the slice groups from necessarily corresponding with the "macroblocks to be Intra refreshed". A suggested amendment to obviate the broadest interpretation of claim 1 reads,

"...assigning, for each Inter frame, one or more of the plurality of macroblocks to be Intra refreshed to a first slice group;
 assigning, for each frame, a the remainder of the plurality of macroblocks to one or more other slice groups..."

Applicant is reminded that during patent examination, the pending claims must be interpreted as broadly as their terms reasonably allow. See *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ 2d 1320, 1322 (Fed. Cir. 1989), and *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1369, 70 USPQ2d 1827, 1834 (Fed. Cir. 2004). See also *Baldwin Graphic Systems Inc. v. Siebert Inc.* (Fed. Cir. 2007), "That 'a' or 'an' can mean 'one or more' is best described as a rule, rather than merely a presumption or even a convention" (Slip Op. 7).

New independent claim 11 recites that "at least the macroblocks of the first slice group are Intra coded", and new independent claim 16 recites "decoding macroblocks of a first slice group as Intra coded", and so prevents the claimed "remainder of the plurality of macroblocks" that may be inter coded as belonging to the first slice group. In this case, then, it is clear that only a subset of Intra coded macroblocks are placed in the first slice group, and that all of the remaining Inter coded macroblocks are assigned to the other slice group or groups.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claim 6 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette Notice of 22 November 2005), Annex IV, reads as follows:

Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture, or composition of matter should be rejected under 35 U.S.C. Sec. 101. Certain types of descriptive material, such as music, literature, art, photographs, and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture, or composition of matter. USPTO personnel should be prudent in applying the foregoing guidance. Nonfunctional descriptive material may be claimed in combination with other functional descriptive multi-media material on a computer-readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 U.S.C. Sec. 101. The presence of the claimed nonfunctional descriptive material is not necessarily determinative of nonstatutory subject matter. For example, a computer that recognizes a particular grouping of musical notes read from memory and upon recognizing that particular sequence, causes another defined series of notes to be played, defines a functional interrelationship among that data and the computing processes performed when utilizing that data, and as such is statutory because it implements a statutory process.

Claim 6 recites "video data" which, despite being claimed as stored on a "memory storage medium", does not by itself impart functionality to a computer or computer device, and is thus considered nonfunctional descriptive material. Such nonfunctional descriptive material, in the absence of a functional interrelationship with a computer, does not constitute a statutory process, machine, manufacture, or composition of matter and is thus non-statutory.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US Patent 5,260,783 A (Dixit). Dixit teaches a digital video encoder. Regarding claim 1, as part of a coding process, Dixit produces composite intra/inter-frame mode coded difference frames comprising both inter-frame coded pixel blocks and intra-frame coded pixel blocks (column 7: line 67–column 8: line 3). The division of a frame into $P \times P$ pixel blocks (column 7: lines 52-55) corresponds with the claimed step of "dividing each frame of a video signal into a plurality of macroblocks". A portion 102 of the pixel blocks, in this example a vertical strip of macroblocks, is chosen to be coded in an intra-frame mode independently of the remainder of the frame (column 8: lines 1-25). This corresponds to the claimed step of assigning Intra-refreshed macroblocks "to a first slice group". The remainder of the difference frame comprises inter-frame coded pixel blocks 104 (column 8: lines 14-15, 22-25). Coding these blocks corresponds to the claimed step of "assigning, for each frame, a remainder of the plurality of macroblocks to one or more other slice groups". In Dixit, coded frames are divided into Type I cells and Type II cells for transmission, with Type I cells carrying advanced overhead information (column 11: lines 1-44). Included in a Type I cell is a "vertical strip-location subfield" 418 (column 11: lines 47-50), which identifies the current location of the vertical strip portion

of intra blocks in a composite intra/inter-frame coded video frame (column 11: lines 64-67). Coding this field corresponds with the claimed "generating a map" locating the macroblocks of the first slice group. After one frame is finished coding, the vertical strip 102 is advanced to the right by one column of blocks, so a new group of blocks is intra-coded. If the vertical strip reaches the right side of the frame, the strip is then reset to the left side of the frame (column 8: lines 26-53). Refreshing the strip position corresponds with the claimed "indexing the map" for future Intra macroblocks for the next frame.

Regarding claim 2, in Dixit, encoded frames are packetized in an ATM structure and transferred over a network (column 10: lines 55-68).

Regarding claims 3-5, figure 1 of Dixit shows several devices connected to a network 12, the devices containing decompressor 20 that includes video decoder 21 and network interface 22, and displaying the decoded video on display device 26 (column 4: lines 15-41).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 11-13 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,333,948 B1 (Kurobe et al.) in view of Dixit. Kurobe et al.

teaches a video coding system that performs intra refreshing. Regarding claim 11, in one embodiment of Kurobe et al., as shown in figure 13, a Group of Blocks (GOB) according to the H.261 or H.263 standards may be refreshed in two modes: a whole-group refresh, in which every macroblock in the GOB are simultaneously refreshed (column 29: lines 11-17), and a dispersed refresh mode, in which only some of the macroblocks within a GOB are refreshed for a given picture (column 29: lines 17-31). As shown in figure 1, a single frame may have GOBs refreshed both in a whole-group refresh and in a dispersed refresh. Then, determining a GOB refreshed in a whole-group refresh in a frame in which other GOBS are refreshed in a dispersed refresh corresponds with the claimed step of "assigning a small subset of the plurality of macroblocks to be Intra refreshed in the first picture to a first slice group", and determining the other GOBs that have dispersed intra refresh, corresponds with the claimed step of "assigning a remainder of the plurality of macroblocks to one or more additional slice groups". Figure 2 shows a flowchart operation of refresh coding the pictures of Kurobe et al. This operation depends on several parameters, including a FMBLK flag determining whether a current GOP is refreshed with whole-group refresh or dispersed refresh (column 29: line 66—column 30: line 4). In addition, one GOB signaled by MBLKG(I), indicates that this group of blocks should be refreshed, regardless of the current status of the GOP as whole-group refreshed or dispersedly refreshed (column 30: lines 33-57). Determining which group of block in a current picture is to be whole-group refreshed corresponds with the claimed step of "generating a macroblock map of the first picture". Furthermore, as figure 2 shows, the mode

selection part 2705 in a coder determines the refresh coding mode of a picture, the refreshing part 2706 or 2707 intra-refreshes the GOB as appropriate, and coding part 2708 codes the frame (column 30: lines 10-64). This corresponds with the claimed step of "encoding the macroblocks of the first picture". As shown in figure 13, the encoded video data is transmitted to a remote decoding apparatus 2709. This corresponds with the claimed step of "transmitting the encoded macroblocks of the first picture". Finally, in Kurobe et al., when the next picture is encoded, the value RCOUNT, denoting a count value of the refresh cycle, is incremented (column 29: line 63; column 30: lines 61-64), and as shown in figure 1, causes a new GOB to become the MBLKG(I) GOB, and new macroblocks in disperse refresh GOBs to be refreshed. This corresponds with the steps for the subsequent picture. However, in Kurobe et al., mapping parameters such as RCOUNT and MBLKG(I) that indicate the location of a whole-group refresh GOB are not transmitted with the encoded macroblocks in a picture.

In Dixit, as mentioned previously, the location of an intra-frame subfield is transferred in the header information of a hybrid intra/inter-frame coded frame (column 11: lines 46-66). This corresponds with the claimed transmission of the macroblock maps.

Kurobe et al. discloses the claimed invention except for transmitting the location of refreshed intra blocks in an inter frame. Dixit teaches that it was known to transmit a refresh block location subfield in the overhead of a video frame. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

made to transmit the location of the whole-group refresh GOB of Kurobe et al., as taught by Dixit,

Regarding claim 12, in both Kurobe et al. and Dixit et al., the progression of intra-refreshed portions of an image occurs in a regular, cyclic, progressive cycle. Eventually, every particular portion of an image will be refreshed multiple times.

Regarding claim 13, in Dixit et al., as shown in figure 9, in a Type I cell, the strip location field 418 is transmitted before the data field 422.

Regarding claims 16-19, figure 13 of Kurobe et al. shows video decoding apparatus 2709 having decoding part 2710, which decodes the video encoded and transmitted from video coding apparatus 2701 and outputs decoded output picture Imo (column 27: lines 49-56).

12. Claims 14, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurobe et al. in view of Dixit as applied to claims 11, 13, and 16 above, and further in view of ITU-T H.264. Claims 14, 15, and 20 specify that the present invention is directed to an H.264 coder and decoder. However, Kurobe et al. is designed for H.261 or H.263 video (column 5: lines 55-59), and Dixit is designed for HDTV video (column 9: lines 3-24), which conventionally operates on MPEG-2. Nevertheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt Kurobe et al. or Dixit to operate on H.264 video, since H.264 states in page i that such a modification would increase the compression ratio of encoded video.

13. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dixit in view of Kurobe et al. Independent claim 6 recites a memory storage medium storing video data encoded according to the method of claim 1, and independent claims 7 and 9 recite apparatuses for encoding and decoding the video of claim 6, wherein the apparatuses each contain a programmed CPU. Dixit does not teach storing encoded video, only transmission, and does not specify if the encoding and decoding apparatuses contain a CPU.

Regarding claim 6, the examiner takes Official Notice that storing encoded, compressed video on a storage medium was well-known at the time of the invention. Regarding claim 7, in Kurobe et al., a video coding apparatus is explicitly stated to be implemented on a CPU (column 28: lines 4-26). Regarding claim 8, Dixit shows video input from a plurality of video sources 14 (column 4: lines 18-19). Regarding claims 9 and 10, figure 34C of Kurobe et al. demonstrates that transmitting video to a PC over the internet was known at the time of the invention (column 1: lines 16-24).

Dixit teaches the claimed invention except for encoding and decoding video with a forced refresh cycle by a CPU. Kurobe et al. teaches that it was known to perform video processing on a central processing unit. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the video encoder and decoder of Dixit as software, as taught by Kurobe et al., in order to perform the invention of Dixit on a general-purpose computer such as a PC.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 5,491,509 A (Jeong et al.), US Patent 5,719,628 A (Ohki), US Patent 6,259,736 B1 (Chujoh et al.), 6,574,277 B1 (Miyamoto), US Patent 6,987,805 B1 (Weckel et al.), all teach forced intra- refresh encoders.

15. Applicant's amendment necessitated a new ground of rejection under 35 U.S.C. 103(a) presented in this Office action. However, this action is non-final due to a new rejection under 35 U.S.C. 101 on previously-presented claim 6.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571) 272-9662. The examiner can normally be reached on Monday-Friday from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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DNW

Mehrdad Dastouri
MEHRDAD DASTOURI
SUPERVISORY PATENT EXAMINER
TC 2600